DOCTORS, THE PUBLIC, AND ACCEPTANCE OF SCIENTIFIC ADVANCES*

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DR. FARMER'S fascinating story reminds one of other episodes in the early days of New England. The first epidemic of smallpox had been reported by Cotton Mather in 1616. The first medical publication in the United States, of course, was Thacher's famous Broadside of 1677 "Brief Rule to guide Common People How to Order Themselves", which told people what to do at the time of epidemics. There were many outbreaks of smallpox in these early years. The next episode involving doctors and the press, after the one described in 1721 so dramatically by Dr. Farmer, was the Benjamin Waterhouse vaccination controversy in 1800 to 1802. Some of us have long searched for Waterhouse items in old book catalogues, partially because we believe thoroughly that Waterhouse was one of our medical heroes, that his promotion of Jenner's vaccine was an important landmark. John Blake's recent publication entitled *Benjamin Waterhouse and the Introduction of Vaccination* throws some doubt on this hero worship. You will remember that Dr. John Blake is the son of a well known professor of medicine at Yale, Dr. Francis Blake, who has contributed so much to our knowledge of infectious diseases. The younger Dr. Blake has gone into medical history intensively. He has just compiled a history, for example, of the Rockefeller Institute for Medical Research. He reviewed the entire Benjamin Waterhouse vaccination story and does not place Dr. Waterhouse quite as high on the historical totem pole as others have. Through careful search of contemporary letters and newspapers he finds evidence that Waterhouse may have had some personal motives in promoting the vaccine. Waterhouse was being deluged with requests for information and vaccine. Blake quotes letters indicating Waterhouse's financial interest in vaccination—as, for ex-

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ample, in a letter of September 6, 1800 to Dr. Lyman Spalding of Portsmouth, New Hampshire:

> "I have only time to say that I have received your second letter, and that I will accommodate you with the matter &c at the same lay which has been offered to me but I declined, namely for one quarter of the profits arising from the inoculation & the contract to remain for 14 months from this time. Abandon the idea of inoculating for small-pox & throw all your attention to the Kine-pox. If this idea suits you & Dr. Cutter you shall be accomodated at once, for half a dozen practitioners stand ready to jump at that offer and and two of them are not at very great distance from you.
>
> "I haste I am yours &c
>
> Benjn. Waterhouse"

Spalding acquiesced by wanting a local monopoly. After several letters about terms, Waterhouse agreed and sent on the virus in return for Spalding's written bond to pay him one quarter of the profits. By October first Waterhouse outlined his "custom of supplying practitioners"—all based on contracts of which he says "in none have I less than a quarter of the profits". This restricted supply of vaccine and a monopoly in distribution was carried over into the press and was coupled with the questions of the effectiveness and harmful reactions to various virus lots being used. Physicians and laymen were to hurl questions, threats, and statements at each other for about two years. Blake describes many such exchanges, as for example:

> "At the same time, Waterhouse was not the only medical man promoting vaccination in the Boston newspapers. In the *Palladium,* for example, 'A Physician' sharply answered 'A Tradesman' who hoped the town would allow a general smallpox inoculation in Boston during the summer of 1801. One Cyrus Fay supported Waterhouse's contention that many had used spurious matter. From Hallowell, Maine, came the report of a previously vaccinated man who had been variolated four times without effect, and from Portsmouth, New Hampshire, an account of a successful public experiment by Lyman Spalding. In October, 1801, both the *Palladium* and the *Chronicle* reprinted a certificate by Asaph Coleman, a Connecticut inoculator, that he had been unable to give smallpox to several persons vaccinated by Dr. Samuel Cooley of Bolton. The following month the *Chronicle* carried the news that cowpox had been found in American cattle by three country physicians in southern New England, and the *Palladium* printed reports in February and June, 1802, of the successful experiments of Nathaniel Miller of Franklin, Massachusetts. In August, 1802, the *Centinel* published a letter from Dr. John G. Coffin of Boston describing the resistance of several persons in Maine to smallpox infection following vaccination."

It is also of some interest that Milton, Massachusetts, was perhaps the first community in the United States that organized an official community clinic. The selectmen secured, in 1809, the services of a

Dr. Amos Holbrook who promptly took care of one-quarter of the town at 25 cents a head.

But whatever the final conclusions may be about Benjamin Waterhouse it is of interest that smallpox itself was shortly under satisfactory control in New England. Following this there were no major controversies about smallpox.

But the basic issue involved, namely that of the fight in the press or on the public stage concerning acceptance of various health measures, did not die at this time. We have only to remember the slow acceptance of chlorination of public water supplies, the course of various antivivisection bills in State Legislatures, tirades against the use of aluminum in cooking utensils, or the current controversies over fluoridation to see that the same struggle continues.

One of the problems that has interested me personally very much, is why certain scientific advances and not others happen to become questions of controversy. In the course of the current fluoridation difficulties in New York City we have tried to interest social scientists, historians, foundations in studying this problem. Is it a fear of the unknown? It does not seem that this is necessarily so. Look at the speed with which many new medical procedures are taken up,—use of antibiotics, DDT, polio vaccine. I am happy to report that the Group for the Advancement of Psychiatry has set up a small study section to tackle this problem of what lies behind the controversy. One of the psychiatrists guesses that when a threat against nature or a threat to the body is involved, these become rallying points for certain groups in the community. It will be interesting to watch what their studies reveal.

From some three years now of practical experience and some reading I can point out that these attacks all have certain things in common. In the first place they all use the same basic method of attack. The laws of scientific evidence are demolished. Having once demolished such laws anyone becomes an expert. My wife, my doctor, a chemist, anyone becomes an expert. The field is flooded with pamphlets so that the whole affair sometimes seems to have become a war of pamphlets. This is true in fluoridation, it has been true in the anti-vivisection fight and the fight against a quack cure such as the Hocksie Cancer Cure.

Secondly, it is of interest that the same people seem to be involved in these various campaigns. For example, I have found it very interest-

ing to ask opponents of fluoridation what else they are against. They attack the use of aluminum cooking utensils; they are for various kinds of nature fads; they advocate "nature" or "health" foods. These are often purchased at so-called health food stores, which incidentally are often centers for the distribution and sale of anti-fluoridation publications.

A third characteristic of such groups is the basic appeal of the emotions often involving religion, communism as well.

Why did not such opposition get started in other movements? The Salk vaccine for example was widely and promptly accepted. Perhaps this was because the vaccine protected against a crippling and tragic disease which hit quickly, against which there were no defenses. Or was it because in recent years the public had learned a great deal about polio? On the other hand, it is of interest that at least one group opposed the Salk vaccine, using the same methods I have just described. Incidentally, many of the people who were in that anti-polio vaccine campaign are also fighting fluoridation now. But to return to the question of public education. What happened in the nation-wide polio vaccine trials has interested me greatly. It has seemed to me that this experiment had broad social implications which have not often been commented on. Essentially, what happened here was that people were informed about the problem, were told what questions needed to be answered, why it was important to get answers to these questions and what could be expected if the answers were favorable. With such a background, coupled with the great interest that had been achieved through the fund raising activities of the National Foundation for Infantile Paralysis, thousands of American parents were willing to have their children be inoculated with an experimental vaccine. Moreover, a good many of these were willing to join controlled experiments in which they did not know if their children were or were not being protected. Adults and children thereby learned something about the scientific method. I am sure that I shall never forget the clarity with which first graders explained the difference between the "real stuff" and "control stuff" and explained the necessity for controlled experiments when we began our inoculations in the public schools here in New York City. One sometimes wishes that doctors understood the value of controlled experiments as well as did these first grade children.

But why is any of this really of basic importance? Ultimately we

know the public has accepted the fruits of scientific inquiry. Can't we go along merrily as we have in the past? Perhaps we can, but it seems to me that there is a deeper question involved now. We live in a scientific age, one in which science is taking an ever more important place in our civilization. The public is eager to accept the gadgets which science and technology produce. The mass media—television, radio, newspapers, magazines—are filled with science stories. A whole new group of science writers has developed—persons incidentally who are doing a superb job of interpreting science to the public. Can't we simply trust these current forces to do the job? Perhaps we can.

But I should like to point out that I think doctors have a real role to play in this problem and that, if they played this role more effectively, it might well be that some of the difficulties which Dr. Farmer and I have pointed out could be avoided. Doctors have contact with a great many persons. The persons with whom they have contact trust them. Doctors probably are the only persons with considerable scientific background with whom most people ever have direct personal contact. Yet doctors are not very clear today what role they can or should play in those problems of public understanding and acceptance of science. Many of them, alas, do not know the rules of scientific evidence themselves, or if they do, they have long since forgotten them and are not aware of their significance. I would, in closing, therefore suggest that physicians themselves could be more helpful in these troublesome times in which science and society are trying to learn how to get along together. As they reexamine their role in our times I suggest that they play not only the traditional role as protector of the family health but that they assume an additional role as interpreters of science and its methods.